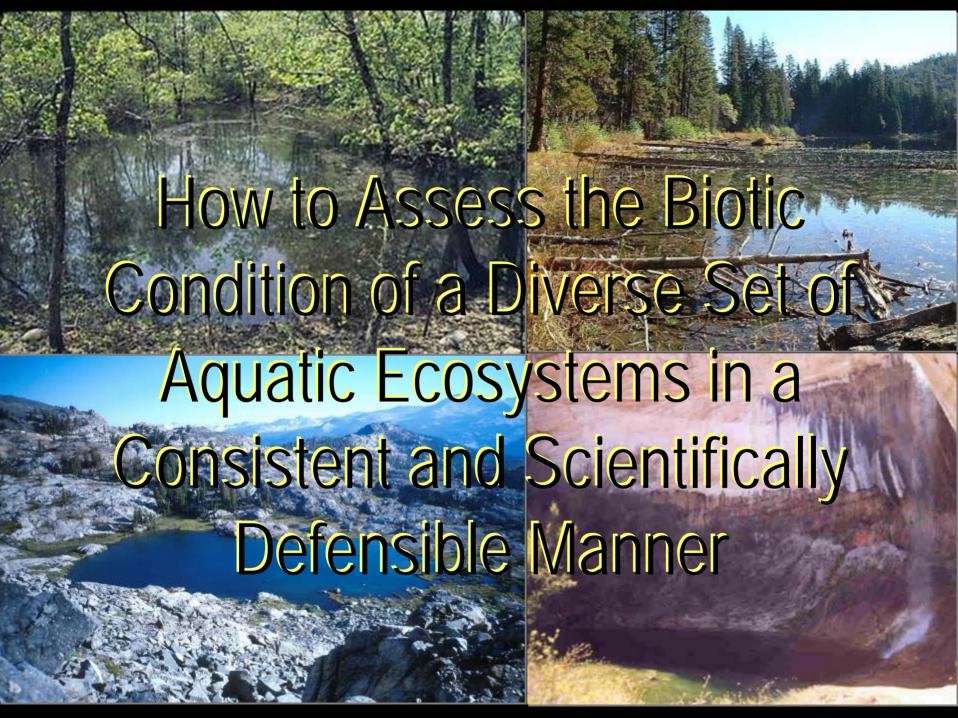
Evaluation of Reference Site Classification Schemes, Probability-based Survey Designs, Biological Indicators, Biotic Tolerance Values, and the Comparability of Different Sampling Methods for Western Lakes and Ponds

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Our Project is Designed to Address Aspects of:

- Defining reference conditions
- Lake classification for bioassessment purposes
- Sampling needed to generate robust estimates of condition
- Indicators for quantifying biological condition
- Use of taxon-specific tolerances to diagnose causes of impairment

General Study Design

Mostly previously collected data:

- 615 southern Sierra lakes
- 46 tinajas in southern Utah
- 130 small lakes in the Uinta Mountains (Utah)
- 73 lakes in the Washington Cascades
- 200+ lakes in the North East (EMAP)
- 40 lakes in the Toolik LTER (Alaska)?

New data:

- Sampling comparability analyses (≤ 12 lakes)
- Stressed lakes if needed (N=???)

Reference Conditions

For western lakes, we will explore how two definitions of 'reference' affect classifications and assessments:

- Landscape context: pristine/minimally disturbed, versus
- 2. Biotic context: as in (1) but containing socially desirable exotic/introduced fish

Which environmental factors are most useful in defining reference conditions for western lakes, and how can these factors be used to classify or model natural differences in biotic potential among lakes?

- Lake Size
- Elevation/Temperature
- Geology/Water Chemistry
- Substrate Type
- Hydrologic Turnover (inlets/outlets)

What probabilistic sampling design can most effectively be applied to western lakes?

- What are the appropriate strata for developing weighting schemes? (see Research Question 1)
- What sample sizes are needed to derive robust estimates of regional conditions?

How effective are three general types of assemblage-wide biological indicators (multimetric indices, RIVPACS, and biotic indices based on tolerances) in assessing the biological integrity of western lakes?

- Performance = accuracy + precision
- Assessed through:
 - Field comparisons
 - Simulations

How comparable are the data obtained from different methods commonly used to sample benthic invertebrate assemblages in lakes and ponds?

Focus on benthic sampling and assessed with a quantitative measure of sample similarity:

- Sweep Nets
- Cores
- Others?

Can stressor-specific tolerance values for benthic lake taxa assist in diagnosing causes of biotic degradation?

- Nutrients
- Fine sediments
- Conductivity
- pH
- Vulnerability to exotics
- Hydrologic alteration

End Note

We are looking forward to talking about results next time.

